

Ser. No. 09/759,766
Attorney Docket No. 2359-00

In the claims:

1. (Currently Amended) An apparatus for augmenting near vision accommodation by contraction of the ciliary muscles of the eye by reinforcement of at least one set of natural zonular fibers, the apparatus comprising:

a means for transmitting a contraction force from the ciliary muscles to the at least one set of natural zonular fibers;

at least one bridge configured to be affixed to in and around the at least one set of natural zonular fibers of the eye; ~~wherein said natural zonular fibers comprise~~

~~a means for transmitting a first contraction force from the ciliary muscles and said at least one bridge affixed to the at least one set of natural zonular fibers; comprises a means for transmitting a second~~

said at least one bridge for augmenting the contraction force ; wherein said second contraction force comprises an augmented first contraction force and for constricting the natural crystalline lens by the augmented contraction force from the transmission of the contraction force from the ciliary muscles to the at least one set of natural zonular fibers and the at least one bridge.

2. (Previously Presented) The apparatus of claim 1 wherein said at least one bridge comprises a symmetric distribution of said at least one bridge.

Ser. No. 09/759,766
Attorney Docket No. 2359-00

3. (Withdrawn) The apparatus of claim 1 wherein said at least one bridge comprises a ring.
4. (Previously Presented) The apparatus of claim 1 wherein said at least one bridge comprises a biocompatible material.
5. (Previously Presented) The apparatus of claim 1 wherein said at least one bridge comprises a synthetic muscle.
6. (Previously Presented) The apparatus of claim 5 wherein said synthetic muscle comprises a member from the group consisting of polymer hydrogels, polymer gels, polymethylmethacrylate (PMMA), polypropylene, silicone polymers, polysilicones, light curable polymeric melts, electroactive ionic polymers and plastic.
7. (Withdrawn) The apparatus of claim 5 wherein said synthetic muscle comprises an artificial muscle.
8. (Withdrawn) The apparatus of claim 7 wherein said artificial muscle comprises a shape memory alloy (SMA).
9. (Withdrawn) The apparatus of claim 7 wherein said artificial muscle comprises a shape memory polymers (SMP) artificial muscle.

Ser. No. 09/759,766
Attorney Docket No. 2359-00

10. (Previously Presented) The apparatus of claim 5 wherein said synthetic muscle comprises an active material.

11. (Withdrawn) The apparatus of claim 10 wherein said active material comprises a member from the group consisting of inflatable mini-balloons, deployable structural mini-bridges, electromagnetically deployable solenoidal structures, piezocerams, piezopolymers, electroactive polymers eletrostrictive polymers, light curable polymers, magnetorheological materials and electrorheological materials.

12. (Previously Presented) A method of correcting presbyopia and hyperopia on demand, the method comprising the steps of:

- a. affixing at least one bridge in and around at least one set of natural zonular fibers of the eye;
- b. transmitting a contraction force from the ciliary muscles to the at least one set of natural zonular fibers;
- c. augmenting the contraction force by the at least one bridge affixed to the at least one set of natural zonular fibers; and
- d. constricting the natural crystalline lens by the augmented contraction force from the transmission of the contraction force from the ciliary muscles to the at least one set of natural zonular fibers and the at least one bridge.

13. (Currently Amended) The method of claim 12 wherein ~~an~~ the natural crystalline eye lens comprises an implanted lens.

Ser. No. 09/759,766
Attorney Docket No. 2359-00

14. (Cancelled) A method of implanting at least one bridge in an eye for augmenting near vision accommodation, the method comprising the steps of:

- a. relaxing the ciliary muscle; and
- b. affixing the at least one bridge in and around at least one set of zonular fibers for providing an augmented contraction force from the at least one set of natural zonular fibers and the at least one bridge for constricting the natural crystalline lens.

15. (Cancelled) The method of claim 14 wherein the step of affixing the at least one bridge to at least one set of natural zonular fibers comprises affixing the at least one bridge to the canal of Hannover.

16. (Cancelled) The method of claim 14 wherein the step of affixing the at least one bridge to at least one set of natural zonular fibers comprises implanting the at least one bridge.

17. (Cancelled) The method of claim 16 wherein the step of implanting the at least one bridge further comprises implanting the at least one bridge to span the internal surfaces of the ciliary muscle and the ciliary processes to the surface of the lens capsule.

18. (Cancelled) An apparatus for augmenting near vision accommodation by contraction of the ciliary muscles of the eye by reinforcement of natural zonular fibers, the apparatus comprising at least three circularly distributed bridges configured to be affixed symmetrically to the natural zonular fibers wherein said

Ser. No. 09/759,766
Attorney Docket No. 2359-00

at least three bridges are configured to span at least a portion of the internal surfaces of the ciliary muscles and the ciliary processes to the surface of the eye lens capsule, wherein said natural zonular fibers comprise a means for transmitting a first contraction force from the ciliary muscles and said at least three circularly distributed bridges affixed to the natural zonular fibers comprises a means for transmitting a second contraction force, wherein said second contraction force comprises an augmented first contraction force for constricting the natural crystalline lens.

19. (Cancelled) The apparatus of claim 18 wherein said at least three bridges comprise synthetic muscles.

20. (Cancelled) The apparatus of claim 19 wherein said synthetic muscles comprise a member from the group consisting of light curable polymer melts and polymer gels.